Mr. Michael T. Davis
Pre-Calculus

1.9 Piecewise Functions Homework
October 27, 2015

Name:_____

Evaluate the function for the given value of x.

$$f(x) = \begin{cases} 3, & \text{if } x \le 0 \\ 2, & \text{if } x > 0 \end{cases} \qquad g(x) = \begin{cases} x + 5, & \text{if } x \le 3 \\ 2x - 1, & \text{if } x > 3 \end{cases} \qquad h(x) = \begin{cases} \frac{1}{2}x - 4, & \text{if } x \le -2 \\ 3 - 2x, & \text{if } x > -2 \end{cases}$$

1. $f(2)$ **2.** $f(-4)$ **3.** $f(0)$ **4.** $f\left(\frac{1}{2}\right)$

5. $g(7)$ **6.** $g(0)$ **7.** $g(-1)$ **8.** $g(3)$

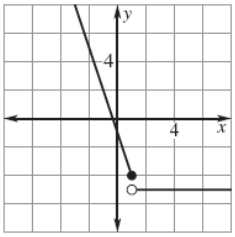
9. $h(-4)$ **10.** $h(-2)$ **11.** $h(-1)$ **12.** $h(6)$

Match the piecewise function with its graph.

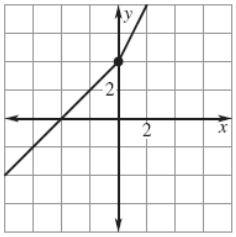
13. $f(x) = \begin{cases} x - 4, & \text{if } x \le 1 \\ 3x, & \text{if } x > 1 \end{cases}$ **14.** $f(x) = \begin{cases} x + 4, & \text{if } x \le 0 \\ 2x + 4, & \text{if } x > 0 \end{cases}$ **15.** $f(x) = \begin{cases} 3x - 2, & \text{if } x \le 1 \\ x + 2, & \text{if } x > 1 \end{cases}$

16. $f(x) = \begin{cases} 2x + 3, & \text{if } x \ge 0 \\ x + 4, & \text{if } x < 0 \end{cases}$ **17.** $f(x) = \begin{cases} 3x - 1, & \text{if } x \ge -1 \\ -5, & \text{if } x < -1 \end{cases}$ **18.** $f(x) = \begin{cases} -3x - 1, & \text{if } x \le 1 \\ -5, & \text{if } x > 1 \end{cases}$

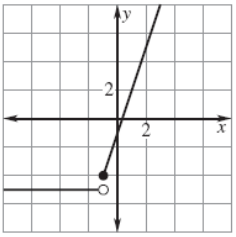
A.



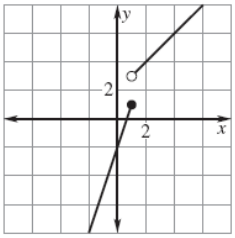
B.



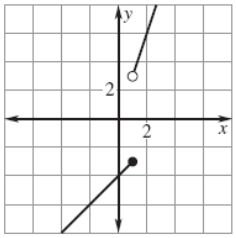
C.



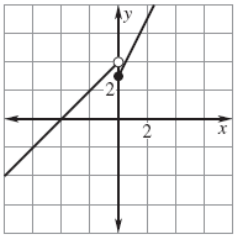
D.



E.



F.



Carefully graph each of the following. Identify whether or not he graph is a function. Then, evaluate the graph at any specified domain value. You may use your calculators to help you graph, but you must sketch it carefully on the grid!

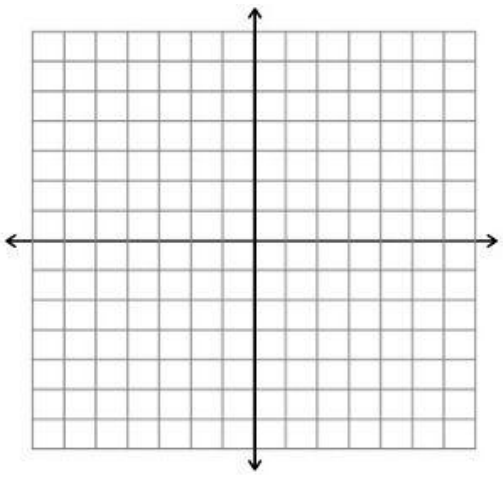
19. $f(x) = \begin{cases} x+5 & x < -2 \\ -2x-1 & x \ge -2 \end{cases}$

Function? Yes or No

$f(3) =$

$f(-4) =$

$f(-2) =$



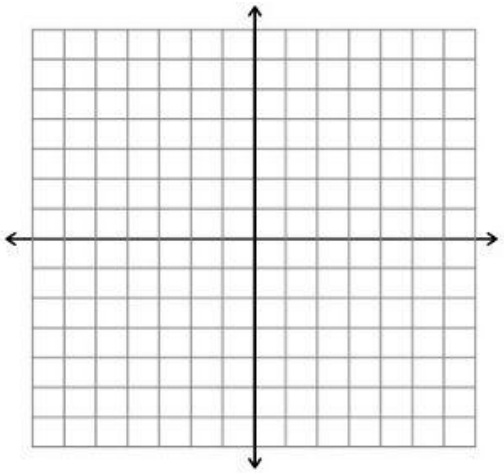
20. $f(x)=\begin{cases} -3 & x\le 3 \\ 2x-5 & x>3 \end{cases}$

Function? Yes or No

$f(-4)=$

$f(0)=$

$f(3)=$



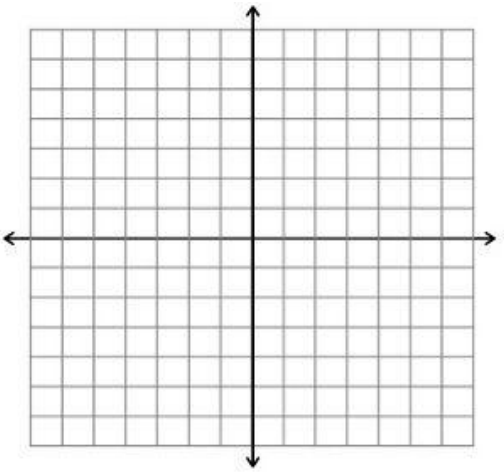
21. $f(x)=\begin{cases} 2x+1 & x\ge 1 \\ \frac{x}{2}-3 & x<1 \end{cases}$

Function? Yes or No

$f(-2)=$

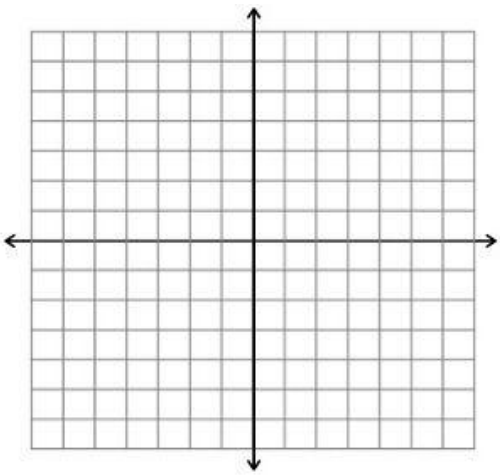
$f(6)=$

$f(1)=$

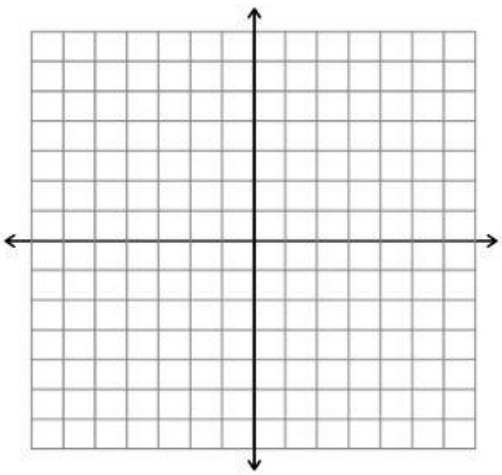


Graph the function.

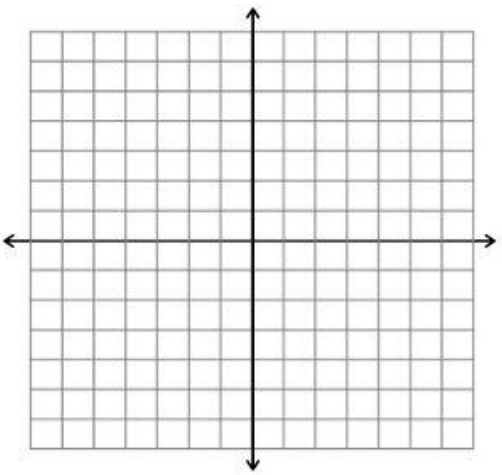
22. $f(x)=\begin{cases} x+3, & \text{if } x\le 0 \\ 2x, & \text{if } x>0 \end{cases}$



23. $f(x)=\begin{cases} x+1, & \text{if } x<0 \\ -x+1, & \text{if } 0\le x\le 2 \\ x-1, & \text{if } x>2 \end{cases}$

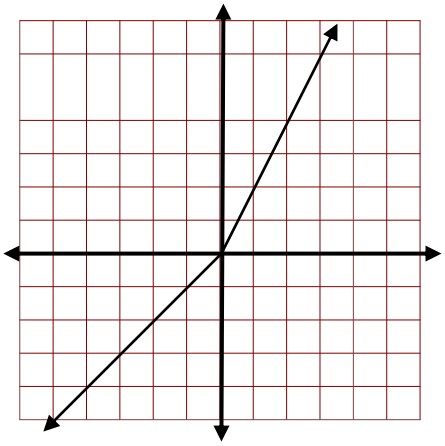


24. $f(x)=\begin{cases} 2, & \text{if } x\le -3 \\ -1, & \text{if } -3<x<3 \\ 3, & \text{if } x\ge 3 \end{cases}$

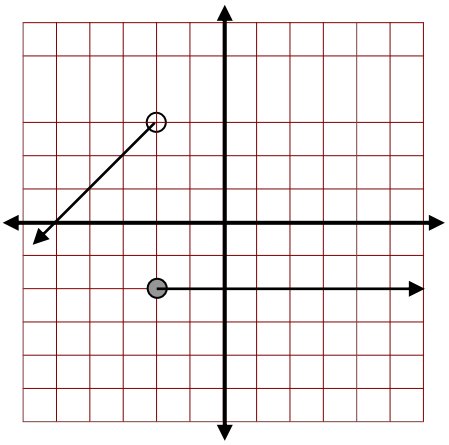


Write equations for the piecewise functions whose graphs are shown below. Assume that the units are 1 for every tic marc.

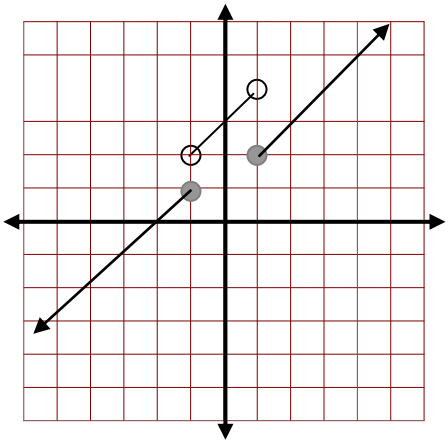
25.



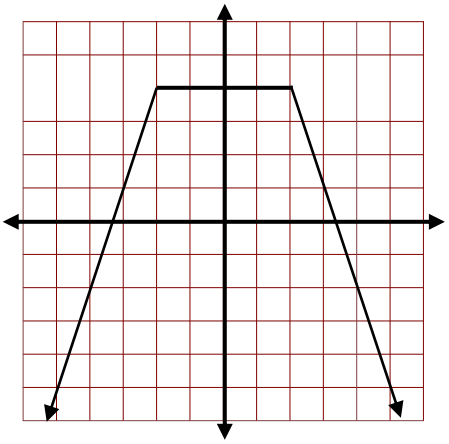
26.



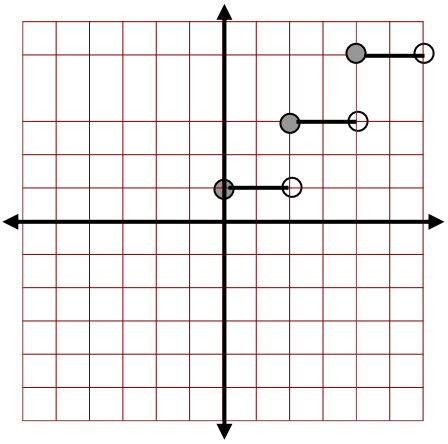
27.



28.



29.



30. **FREE RESPONSE**

The admission rates at an amusement park are as follows.

Children 5 years old and under: free
Children between 5 years and 12 years, inclusive: $10.00
Children between 12 years and 18 years, inclusive: $25.00
Adults: $35.00

a) Write a piecewise function that gives the admission price for a given age.

b) Graph the function.